UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/017,193	12/12/2001	Mai Huong Dang	52200.8010	5901

22918 7590 01/09/2008

PERKINS COIE LLP
P.O. BOX 2168
MENLO PARK, CA 94026

EXAMINER	
PADGETT, MARIANNE L	
ART UNIT	**PAPER NUMBER**
1792	
MAIL DATE	**DELIVERY MODE**
01/09/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/017,193	DANG ET AL.	
	Examiner	Art Unit	
	Marianne L. Padgett	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9,11-24 and 26-31* is/are pending in the application.

4a) Of the above claim(s) *11,16-19,27 and 28* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7, 9, 12-15, 20-24, 26, 29-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/22/2007 has been entered.

Applicants' amendments to the claims have put the limitations of claims 8, 10 & 25 into the independent claim 1, thus removed all the art rejections as previously presented (action mailed 9/20/2006), since none of those art rejections covered this combination of features, which had not previously been claimed together. The examiner notes that in the specification, as page 9, lines 3-6 disclose the gasses from original claim 7 for use in the process in general, & as page 10, lines 1-8 provide disclosure of the selected contact gasses or liquid from original claim 25, now included in the independent claim 1, also for use in the process in general, the new combination of limitations in the independent claim can be considered to have adequate support when employed with the specific plasma gasses of dependent claim 7.

Applicants' discussion with respect to the 112, first paragraph rejection (section 2 of the action mailed 9/20/2006) of claim 7, on the middle of page 7 of the 10/22/2007 response, has provided adequate support for the description of the claimed gas percentage as "by volume", as the citation on page 8, lines 28-29 in the original specification is in the appropriate context & while indirect for providing support for the percentage claimed, does show that the plasma gasses are being considered in terms of volume, as opposed to other measurements techniques & combined with applicants' discussion is considered great file wrapper estoppel concerning the basis of gas percentages in this application.

2. Claims 1-7, 9, 12-15, 20-24, 26 & 29-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-7, 9, 12-15, 20-24, 26 & 29-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In step (c), "contacting **the exposed surface**..." (emphasis added) can be considered ambiguous, as there are two previously introduced "exposing..." limitations in steps (a) & (b), hence it can be considered unclear when in the process sequence the optional contacting is performed, even considering that the "surface-modifying group" covalently attaches to "said functional group", as the functional group conversion could be occurring simultaneously with the covalent attachment, i.e. the contacting step could be simultaneous with the second exposing step, or could be sequential thereto. It is noted that in the summary on page 3, in the discussion of the analogous process sequence that the plasma step is referred to as "treating the surface", which is also it the language used in the original claim 1, wherein both of these instances of original disclosure the "exposing" language was only used with respect to the step of converting the active species to stable functional groups, thus the original language did not include this ambiguity & the ambiguous nature of this language could also be considered to encompass **New Matter** with respect to the original disclosure.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1-5, 7-10, 12, 20-24, 26 and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Subramanian (5,643,580) in view of Kunz et al (6,733,847 B2), optionally further in view of Spence et al. (6,106,659), or optionally Inagaki et al. (2002/0098296 81).

Subramanian ('580) teach plasma treating a surface to functionalize it, where that surface may be part of medical device, such as a catheter, vascular stents or various blood transfer devices, hence includes tubular substrates with lumen as well as plastic surfaces. The plasma is used to break bonds & create reactive groups, and if a reactive gas is employed which reacts with the substrate, then functional groups, such as hydroxyl or carboxyl or amine, are formed on the surface via use of gas mixtures, such as CH_4/O_2 or H_2O/O_2 or CH_4/NH_3, where it is taught that the reactive gases may also be introduced with an inert carrier, such as He or Ar, typically in a 3:1 ratio. The reactive groups may then be modified by or further functionalized with an amphipathic compound (i.e. multifunctional linker) and a bioactive agent, either simultaneously or in sequence, where bioactive agents may include antithrombogenic compounds (heparin) or polypeptides (amino-acid sequences) or antibiotics or growth factors, etc (reads on either step

1(d) or 1(d)+1(c)). See the abstract; summary, esp. col. 1, lines 20-56; col. 2, lines 44-60; col. 3, line 1-col. 4, line 35, esp. col. 3, line 4-30 for gases and reactive groups, lines 32-50 for step sequences and lines 52-64 for uses with col. 4 discussing substrates; col. 5, lines 1-29 for a particular example with reactive amine groups, 1-ethyl- 3-(3- dimethylaminopropyl) carbiodimide as a multifunctional group, then heparin as a biological surface modifying group.

For the plasma functionalization step, Subramaniam recommends using a low temperature plasma produced by glow discharge, where the "typical" pressures are 0.1-10 Torr, and also notes that the plasma breaks bonds, which teachings can be employed in alternative routes to produce the same desired end of covalently bonding therapeutically effective coatings. Notably, the two main routes discuss either employing a reactive gas to react with the plasma broken bonds on the substrate, exemplified by reactive gas mixed with carrier gas in the plasma (col. 2, lines 56-col. 3, lines 30; col. 5, lines 3 and 29+), or exemplified by functionalizing via contact within amphoteric solution using Langmuir-Blodgett (LB) coating techniques, then crosslinking with inert gas plasma, where this latter techniques may also have had a first plasma functionalizing procedure to create reactive functional groups (-COOH, -OH, amines, etc.) before the LB deposition (col. 3, lines 32-40+; col. 6, lines 24-27).

Subramanian differs by not using an atmospheric pressure plasma, and by directly using the activated sites created by the plasma to covalently bond with surface modifiers equivalent to applicants' steps (c) &/or (d). While Subramanian teaches low-pressure as typically used, he does not teach that the pressure is critical to the plasma process, but emphasizes as important the glow discharge's ability to create reactive surface sites to enable functionalization of the surface, hence one of ordinary skill in the art would have expected that any plasma techniques, particularly a glow discharge plasma techniques, capable of such reactive site formation with resulting functionalization, would have been expected to be effectively employed in Subramanian's process, thus an obvious variation thereof.

Kunz et al teach treating various substrates, including many types of polymers (polyolefins, halogenated polymers, Teflon coated paper products, etc.), that may have various forms, such as films, molded, extended, fibers, felts, woven fabrics, etc. (col. 3, line 42- col. 6, line 67). The first step may be subjecting the substrate to plasma or glow discharge at atmospheric pressure, where the gas may be a mixture of inert gas with reactive gases, such as N_2, O_2 or H_2O, with use of a closed system when air is to be excluded. The next step after the discharge is discontinued, is applying as vapor or in solution, an electron- or H-donor to react with the free radical formed on the surface, that may be exemplified by amines. Kunz et al. notes that for atmospheric conditions of corona discharge, the application of the H- or electron- donor group (i.e. functional group) can be applied by solution spraying, preferably after & downstream from the discharge zone. Thereafter, a further material (coating) may be applied, or the plasma treated & functionalize substrate may be stored. See the Abstract; col. 2, line 30- col. 3, line 19; col. 7, line 13-25+; col. 9, line 51- col. 10, line 18, especially lines 12-13; and col. 17, line 43- col. 18, line 36. While specific mixes of gas preparation for the corona option are not taught, it would have been obvious to one of ordinary skill in the art to determine desirable proportion depending on specific materials being treated and required degree of surface functionalization for the particular end use.

Kunz et al does not disclose any particular solvents to use when solutions are being applied to functionalize the activated surface, however as many of the e^- or H- donors (amines) are polar molecules, use of polar solvents, such as water, would have been an obvious option due to known solubility, thus obvious to employ due to expected effectiveness. Note as claimed the specifically listed gas or liquid does not have to be what is supplying the functional group; it just must supply the effective conditions. It is further noted that amines & ammonium hydroxide or ammonia have related chemical reactions, with overlapping applicability in the teachings.

Therefore, given the teachings of Kunz et al., which show that glow discharge plasma treatment (subatmospheric pressure to atmospheric pressure) may be employed to former reactive surfaces that are

subsequently functionalized with either gas or liquids that supply functional groups with electron or hydrogen donors, that are intended to be employed for bonding subsequent deposits to produce strong adherence; it would have been obvious to one of ordinary skill in the plasma art to employ the techniques of Kunz et al. for plasma surface treatments in Subramanian, with the expectation of analogously beneficial results, as the techniques are employed for like it adhesion purpose on like materials [(Subramanian: plastic or metal substrates, including fibrous; col. 3, lines 10-15; col. 4, lines 1-35, especially 20-25) & (Kunz et al.: col. 1, lines 16-21; col. 2, line 66-col. 3, line 2 & 42-col. 7, line 12, naming numerous classes of plastics, as well as inorganics like metal as effectively treated, plus shapes of fiber, woven fabric, 3-D shapes, etc.)]. With respect to the gas composition used for the initial plasma treatment to create reactive sites in this combination of Subramanian & Kunz et al., choice of specific gas composition would have depended on particular substrate material being treated, desired functional groups to be formed thereon & used for bonding particular linking &/or coating materials, noting overlapping teachings concerning mixtures of inert gases with reactive gases, where routine experimentation would have reasonably been expected when employed for optimizing for particular materials to have encompassed composition proportions as claimed, especially considering that a higher percentage of oxygen at lower pressures will be equal to in the absolute amount of reactive gas present to a smaller percentage at higher pressures.

Optionally, Spence et al. (659) also teach plasma surfaced treatment techniques, including high pressure plasmas that may be 1 atm, noting the advantages of atmospheric pressure plasmas that don't need or involve expensive pressure control systems; that higher levels of oxygen &/or nitrogen can be obtained on the high-pressure RF plasma activated surface than with conventional corona treatment; & that use of the high-pressure glow discharge techniques reduces contamination potential. Spence et al. teach applicability to have wide variety of techniques & effects (modify or improve surface properties for wettability/hydrophilicity,... to improve it adhesion of other materials, etc.), including gases (Ar, He, O_2,

air,... ammonia... acrylic acid...) & substrates (fibers, films or webs, woven or nonwoven or porous, of natural or synthetic polymers, it uses such as food packaging, etc.), which provide overlapping teachings with the primary reference, and where Spence et al. is teachings additionally including gas mixtures of inert (Ar or He) + reaction (7 % O_2), as useful for the plasma treatments, demonstrating the expected effectiveness of such proportions. Also note teachings that initial plasma exposure to create an activated surface may include simultaneous or sequential exposure to reactants, such as monomers for grafting, thus further demonstrating its expected effectiveness of subsequent reaction after application of atmospheric pressure plasma with gases as taught in Subramanian & as claimed, as well as the expected effectiveness of such plasmas for used to create active sites for further functionalization. In Spence et al., particular see the abstract; figures 14-16; tables 1-11; col. 6, line 8-col. 8, line 25, especially col. 7, lines 15-49 & 62-col. 8, line 10; col. 9, lines 25-68+; col. 15, lines 6-21; col. 17, line 31-col. 18, line 39; col. 21, lines 13-40; col. 23, lines 28-43; col. 24, lines 1-47. Thus Spence et al. provides further motivation & demonstrations of expected effectiveness for the above combination.

Optionally, with respect to alternatively claimed sequences of applied gases after plasma treatment, i.e. air or oxygen, Inagaki et al. (296) demonstrates plasma treatment of polymer surfaces (polypropylene) followed by exposure to air (oxygen containing) to functionalize with O-containing groups, is effective for creating surfaces capable of subsequent covalent bonding (abstract; [0013-16] & [0030-34]), thus it would've been further obvious to one of ordinary skill in the art to employ such a sequence for the production of taught carboxyl &/or hydroxyl functional groups, as it has been reasonably shown to be an effective techniques in analogous processing. It is further noted that while the exemplary preferred plasma parameters are for reduced pressures, that these are not required, and that either Kunz et al. &/or Spence et al. have shown the effectiveness of high pressure (1 atm) for plasma surface activation of like materials with like gases, hence reduced versus atmospheric pressure would not have been expected to provide any obstacle to the expected effectiveness of this taught treatment sequence, only

expected to effect the optimization for particular process parameters, such as gas proportions, employed at the different pressures.

5. Of cumulative interest, and Yializis et al teach a a substantially atmospheric pressure plasma technique as desirable over the taught low pressure low temperature plasma as in the primary reference to Subramanian, due to the economic advantages of not needing vacuum, but also the improved uniformity of Yializis et al's particular procedure, hence it would have been obvious to employ as an alternative to Subramanian's low pressure glow discharge, especially considering that it specifically suggests the same gases with potentially the same combination for activation/pretreatment of polymeric surfaces. Furthermore, Yializis et al show varying results of different gas mixtures on different polymers for various lengths of time, hence it would have been obvious to optimizes for particular gas, substrate, surface energy, etc., where Yializis et al suggest proportions that would have been effective with the atmospheric plasma. Yializis et al teach an atmospheric plasma treater, which is taught to be an improvement on prior art plasma and corona discharge processes, and as illustrated in Figures 1, 4-8 the electrodes and plasma space are always enclosed, whether the plasma treater is open at input and out put of the continuous substrate to atmosphere as in 1 and 4 or has fully enclosed spaces as schematics of 6 or 7 might imply. Yializis et al teach their process provides a uniform treatment superior to corona or low temperature plasma or atmospheric pressure glow discharge, and is useful for gases, such as He, Ar, alone or mixed with N_2, O_2, air, CO_2, CH_4, C_2H_2, ammonia, etc. Examples 1-3 treat polypropylene, PET or polyethylene with various gas mixtures to produce favorably changes in surface energy, i.e. activation, taught to be useful in functionalization of polymer films for controlled wettability and adhesion. See the abstract; col. 1, lines 21-55+; col. 2, lines 6-65+; col. 5, lines 5-34, esp. 25-34; col. 6, lines 40-67 and examples.

6. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Subramanian ('580) in view of Kunz et al. et al (& optionally Spence et al. or Inagaki et al.), as applied to claims 1-5, 7-

10, 12, 20-24, 26 and 29-31 above, and further in view of Valentin (6,428,579 B1) i or Clapper (5,744,515).

While Subramanian does not elaborate on what is included by "growth factors" or protein options (col. 3, line 64), they consistently suggest that other bioactive agents than those they explicitly exemplify would have been usefully deposited by their technique (col. 2, line 51-55; col. 3, line 63-64; col. 6, lines 22-33), hence these teachings are considered suggestive of employing other biological agents that may influence or encourage growth or protein binding. Therefore, given teachings of desirable bioactive coating materials for cell growth, as in Valentini or Clapper discussed below, they would have been obvious for reasons given immediately below.

Valentini or Clapper teach claimed bioactive molecules for bonding proteins or cell attachments, such as proteins, collegian, fibronectin and laimin in the former, and fibronectin, P- or N-cadherin in the latter, hence as these specific species were known for use in the generic function as a cell adhesion agent, it would have been obvious to employ them in the teachings of Subramanian's process for their know and intended function, as suggested by these ternary references.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Subramanian ('580) in view of Kunz et al. et al (& optionally Spence et al. or Inagaki et al.), as applied to claims 1-5, 7-10, 12, 20-24, 26 and 29-31 above, and further in view of Ikeda et al. (4,743,258) or Clapper.

Subramanian only discuss plastic substrates generally, thus does not discuss the specifically claimed porous expanded polytetrafluoroethylene, however either Ikeda et al. (abstract; col. 3, specially lined 32) or Clapper et al. (abstract; col. 7, line 55-col. 8, line 67+, specially lines 20-25), both previously cited/discussed, recite the usefulness of PTFE for vascular tubing, a type of enduse contemplated in Subramanian & expected to include porous structures, hence it would've been obvious to one of ordinary skill in the art to employ such materials as polytetrafluoroethylene for the plastic in such vascular prostheses the primary references processes, as it is seen to be a conventional plastic material used

therefore in related processes were plasma treatment is also contemplated, especially considering that the secondary reference to Kunz et al. shows the expected effectiveness of plasma treating fluorocarbon surfaces, such as Teflon (PTFE), when sequential functionalization is to be performed (col. 5, lines 15-25 & col. 6, line 58).

8. Claims 1-7, 9, 12, 21-23, 26 and 29-31 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 and 11-17 of U.S. Patent No. 6,159,531 (Dang et al), in view of Kunz et al or Spencer et al. (659), as discussed above in section 4, and further in view of Ikeda et al (258) or Clapper in claims 3-6, as discussed above in section 7.

The broader claims of this application encompass the narrower claims of the patent, due to the broad terms in this application which encompass the narrower meaning is of the patented terms, which can be considered stable functional groups. The patent's claims are broader in that they are to a "plasma cleaning" technique, while employing claimed gases & analogously functionalizing the plasma treated surface, does not specify that the plasma is atmospheric pressure, nor that the cleaning technique necessarily creates active species on the surface of the substrate, however as shown by Kunz et al. or Spencer et al., atmospheric plasma treatments are known to be effective in creating such active sites for subsequent reaction to functionalize, including using the gases as required in the patented claims with separate non-plasma sequential reactions, demonstrating as discussed above the obviousness of employing atmospheric plasma where such surface activation is desired, as well as doing so with sequential functionalization.

The claims as presently written differ by the patent's claims which are more narrowly directed to a specific end use (medical devices), which is related to & overlapping with the present applications requirement of contacting & bonding a bioactive or biocompatible agent to the functionalize surface, which the patent also requires in its claims 2-3. The present independent application claim also differs by creating the functional groups in the absence of plasma, while the patented claims attach the functional

groups by employing plasma to deposit a layer having functional groups, however this is an analogous difference with that of Subramanian, hence the reasons for combining with Kunz et al. are analogous thereto.

While the patent does not claim specific surface densities of bioactive or compatible agents, it would have been obvious to one of ordinary skill to adjust the degree of their treatments depending on the desired concentrations in the resultant product and end use, hence lacking any broad specific significance to the generic limitations, such is considered routine optimization.

The patent does not claim specific shapes or morphologies or PTFE substrates to be treated, however Ikeda et al or Clapper, discussed above shows the need and desirability to perform analogous treatments on tubular porous (PTFE) substrates as claimed, hence it would have been obvious to employ such substrates in the (531) patent process, as they have been demonstrated to be a type of medical device needing such treatments.

9. Claims 13-15 and 20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 & 11-17 of U.S. Patent No. 6,159,531 in view of Kunz et al or Spencer et al. (659), and further in view of Ikeda et al (258) or Clapper in claims 3-6, as applied above in section 9, and further in view of Valentini (6,428,579 B1) or Clapper (5,744,515), discussed in section 6 above.

The claims of this application encompass the narrower claims of the patent, due to the broad terms in this application which encompass the narrower meaning is of the patented terms, which can be considered stable functional groups.

While the patent claims, specifically 3, specify cell-adhesion agents, they do not enumerate specific ones as in claims 13-15, however, Valentini or Clapper teach claimed bioactive molecules for bonding proteins or cell attachments, such as proteins, collegian, fibronectin and laimin in the former, and fibronectin, P- or N-cadherin in the latter, hence as these specific species were known for use in the

generic function as a cell adhesion agent, it would have been obvious to employ them in the ('531) process for their know and intended function, as suggested by these ternary references.

10. Applicant's arguments with respect to claims 1-7, 9, 12-15, 20-24, 26 & 29-31 have been considered but are moot in view of the new ground(s) of rejection.

11. Other references of interest to the state-of-the-art include: Zhang et al. (6,479,595 B1) that is equivalent to Spence et al. or Yializis et al for showing high pressure glow discharge treatments useful for surface functionalization, including atmospheric pressure, especially note col. 12, line 7-37 that teaches activity a plasma treated (functionalized) surface is stable with respect to air, but the teaching does not indicate whether or not any "conversion" occurs during such exposure to air.

Roth et al. (5,403,453), who is teaching use of atmospheric pressure plasmas to increase the wettability of a substrate surface, with the intent of producing a staple wettability of fact be a plasma that employs air, He, Ar, (He or Ar) + 7 % O_2.

Also employing atmospheric plasma surface treatments are: Timm et al. (6,787,179 B2), but all surface treatments therein are simultaneous, not multistep; Kuckertz et al. (6,613,394 B2), but employs a remote plasma & Bourham et al. (2007/0161308 A1), whose teachings are not prior art.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 8:30 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available

through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MLP/dictation software

1/3-4/2008

MARIANNE PADGETT
PRIMARY EXAMINER